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Radio Astronomy from Jansky to the Future – An Engineer's Point of View



Prof. Sander Weinreb (CalTech and JPL)

Sander Weinreb is presently a Principal Scientist at JPL and a Faculty Associate at Caltech. He received the B.S.E.E. and Ph.D. degrees from M.I.T. in 1958 and 1963 respectively. Most of his career has been in the administration or development of instrumentation in radio astronomy. From 1966 to 1988 he led the Electronic Division of National Radio Astronomy Observatory where he was responsible for the design of all electronics for the Very Large Array and all other telescopes operated by the observatory. In 1989 he joined the central research laboratory of Martin Marietta where he led the millimeter-wave integrated circuit design and test group until 1996. He has had interim teaching positions at UC Berkeley, U. of Virginia, and U. of Massachusetts before joining JPL and Caltech in 1999. Dr. Weinreb's major accomplishments are the introduction of digital correlation techniques into radio astronomy, the discovery of the first cosmic molecular spectral line (OH) and the introduction of cryogenic transistor amplifiers to radio astronomy. He has over 150 publications, has served on many review and visiting committees, is a Life Fellow of the IEEE, and was the recipient of the both the 2008 Reber Medal and the 2010 Jansky Award for innovative lifetime contributions to radio astronomy. His current research activities are in the areas of cryogenic low noise amplifiers and decade bandwidth antenna feeds.

Abstract

This lecture is similar to the Jansky lecture he gave at NRAO several months ago. Perhaps we may take the materials from NRAO web site, as the highlights of his achievements during his career. Instead of give a abstract of the talk. Is that ok? The Jansky Award: The 46th Annual Jansky Lecture will be given by Dr. Sander Weinreb of NASA's Jet Propulsion Laboratory and the California Institute of Technology and is entitled "Radio Astronomy from Jansky to the Future - An Engineer's Point of View". Dr. Weinreb is being honored for his pioneering developments of novel techniques and instrumentation over nearly half a century which have helped to define modern radio astronomy. Sandy's development of the first autocorrelation spectrometer and the detection of the first interstellar molecule at radio wavelengths revolutionized astronomy. He has been a leader in the technological development of cm and mm astronomy throughout his career, designing the electronics for the Very Large Array, and founding the NRAO electronics lab that has been the most productive and advanced radio astronomy electronics lab in the world. At the Five College Radio Astronomy Observatory, Martin-Marietta, and Caltech, he has continued his leadership in technological innovation in radio astronomy, and has been the "guru" for several generations of students, with particular emphasis lately on pioneering work on MMICs. He has made seminal contributions to every low noise cryogenic receiver technology employed in radio astronomy, from parametric amplifiers to Superconductor-Insulator-Superconductor (SIS) mixers to field-effect transistor (FET) and High Electron Mobility Transistor (HEMT) amplifiers. He is currently Principle Scientist at NASA-Jet Propulsion Laboratory. As part of the Jansky award, Dr. Weinreb will be giving lectures at the NRAO sites on his work. First awarded in 1966, the Karl G. Jansky Lectureship was established by the Trustees of Associated Universities, Inc. to recognize outstanding contributions to the advancement of radio astronomy. It is named in honor of Karl Jansky, who first detected radio waves from a cosmic source in 1932.



All are welcome! Tea, coffee, biscuits will be served at 9:45 A.M.